

Work Order ID 64203

Tuesday, November 30, 2010 11:23:33 AM

Page 1

Item ID: D3829-3KGY

Accept

Setup Start

Revision ID:

Stop

Item Name: Vertical Tunnel, Aft Center

Start Date: 11/30/2010 Start Qty: 2.00

Cust Item ID:

Required Date: 12/14/2010 Req'd Qty: 2.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D3829

A

100

0.00



HandThermo

Memo

0.00

Hand Finishing Thermoforming

I-Cut Sheet to required Blank size

2

10/12/14

105

0.00



HandThermo

Dry Material

Memo

0.00

Hand Finishing Thermoforming

Dry Sheet as per QSI022 KYDEX

Temp: 150

Time IN: 4:30 10/12/15

Time OUT: 7:00 10/12/15

BB 10/12/16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Page 2

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Cust Item ID:

Required Date: 12/14/2010 Req'd Qty: 2.00

Customer:

Reference:

Run Start

Approvals: Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

110

0.00



Thermoform

Thermoforming Machine

Memo

1-Machine Set-Up
2-Pre-heat Tool to required temp.
3-Thermoform as per Dwg and Folio #FTA081 using tool DT9226
Dwg Rev: A
Folio Rev: E

0.00

x2

DL
10/12/16

120

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Quality Control

Memo

Visually inspect part for proper formation and texture

0.00

x2

DL
10/12/16

130

QC8- Inspect parts - second check

0.00



QC

Quality Control

Memo

0.00

2

BB
10/12/16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Tuesday, November 30, 2010 11:23:34 AM



Page 3

Item ID: D3829-3KGY

Accept



Setup Start



Revision ID:

Stop



Item Name: Vertical Tunnel, Aft Center

Start Date: 11/30/2010 Start Qty: 2.00



Cust Item ID:

Required Date: 12/14/2010 Req'd Qty: 2.00



Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start



QC: Date: SPC (Y/N): Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140

0.00



HandThermo

Memo

0.00

2

BB 12/12/20

Hand Finishing Thermoforming

1-Trim to finished dimensions as per Dwg

150

0.00



QC

Memo

0.00

2

BB 12/12/20

Quality Control

Complete FAI document

160

0.00



QC

Memo

0.00

8042/23

Pto →

Quality Control

QC5- Inspect part completeness to step on W/O

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3829-3K6Y PAR#: CAR Fault Category: Thermo Forming NCR: Yes No DQA: / Date: 11/01/10
 Resolution: Scrap Rework Disposition: Scrap Rework QA: N/C Closed: / Date: 11/01/11

NCR: 64203		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10/12/03	# 120	Found crack in both corner in all parts (qty x2) on upper end Re: Tooling / process	<u>/</u> RESUME	See below ↓			<u>/</u> RESUME	<u>S</u> 10/12/03
11/01/06	# 120	<u>SAME</u>	<u>/</u> 11/01/06 081042	TRIM PER OPTION #3 OF ATTACHED EMAIL	<u>Wh.</u> 11/01/06	<u>S</u> 11/01/06	<u>/</u> 11/01/06 081042	<u>S</u> 11/01/06

NOTE: Date & initial all entries

Work Order ID 64203

Tuesday, November 30, 2010 11:23:34 AM

Page 4

Item ID: D3829-3KGY

Accept

Setup Start

Revision ID:

Stop

Item Name: Vertical Tunnel, Aft Center

Start Date: 11/30/2010 Start Qty: 2.00

Cust Item ID:

Required Date: 12/14/2010 Req'd Qty: 2.00

Customer:

Reference:

Run Start

Approvals: Process Plan: Date: Tooling: Date:

Stop

QC: Date: SPC (Y/N): Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan Accept Reject Reject Insp.
Code Qty Qty Number Stamp

170

Identify as per dwg & Stock Location: 0.00



Packaging

Memo

PP 64200 0.00

Packaging

11/01/06

180

QC21- Final Inspection - Work Order Release 0.00



QC

Memo

0.00

Quality Control

10/01/12

MF

11-01-06

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Tuesday, November 30, 2010 11:23:33 AM

Page 1

Work Order ID: 64203



Parent Item: D3829-3KGY



Parent Item Name: Vertical Tunnel, Aft Center

Start Date: 11/30/2010

Required Date: 12/14/2010

Start Qty: 2.00

Required Qty: 2.00

Comments: lpp Rev. A New Issue 10/11/30 DL

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MKYD6185S.080-P3- 52068		Purchased	No			100	sf	393.5600	6.861 8.66	17.40704			



Kydex steel grey



Location

therm

Loc Qty

393.56

Loc Code

111807

393.56

20.583 sq ft

Ph
10/12/16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 64203
Description:	Part Number: D3829-3KGV
Inspection Dwg: D3829 Rev: A	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST
THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than "	✓			
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

Measured by: Wc	Date: 10/12/20
------------------------	-----------------------

TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
37.0	Ref	37	✓			
8.2	Ref.	8.2	✓			
1.5	± .100.	1.5	✓			
0.050	MIN	.052"	✓			

Measured by: Wc	Date: 10/12/20
Audited by: 8	Date: 10/10/20
Preliminary Approval:	Date:

Rev	Date	Change	Revised by	Approved
B	10.04.14	Added preliminary approval	KJ	

10.04.14

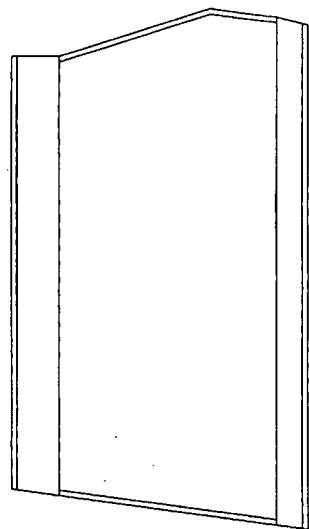
8 7 6 5 4 3 2 1

D

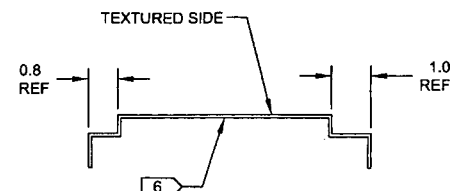
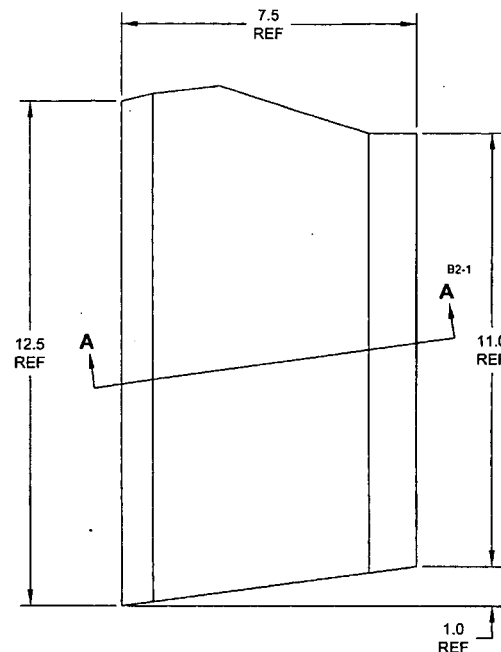
C

B

A



MIN THICKNESS
0.035
(BOTH SIDES)
1.5 REF
0.5 REF



SECTION A-A
C3-1



D3829-1 VERTICAL TUNNEL, UPPER L/H

NOTES:

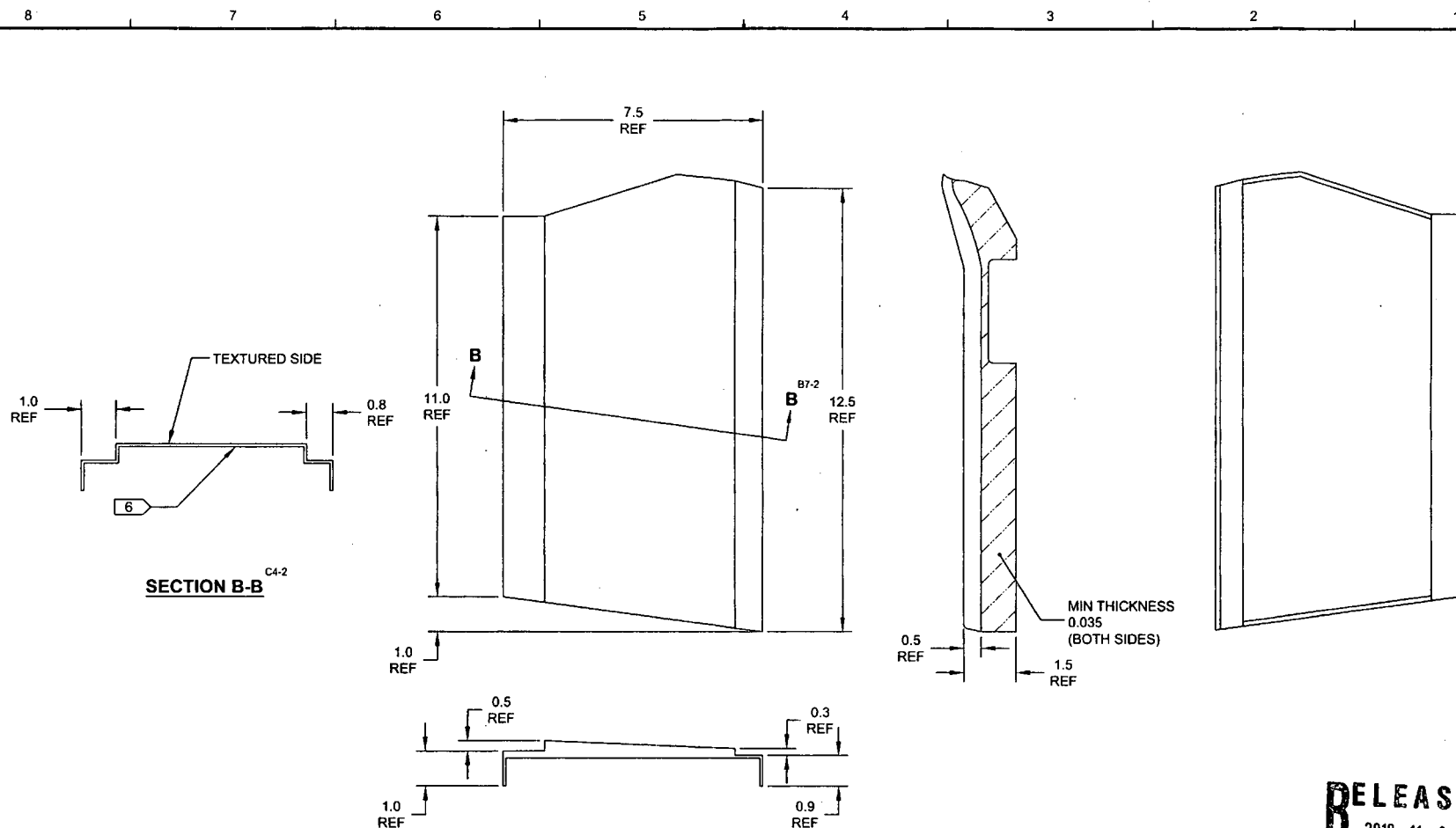
- 1) MATERIAL: SEE TABLE
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: DART P/N (SEE TABLE) PER DART QSI 044 6.4
- 7) WEIGHT: 0.35 lbs
- 8) TOOLING: THERMOFORM PER MOLD DT9232 PER DART QSI 022. TRIM PER MOLD.
- 9) MINIMUM THICKNESS: 0.050" UNLESS OTHERWISE NOTED

PART NUMBER	DESCRIPTION
D3829-1KIV	KYDEX 6185, 0.080 THICK, P3-VELOUR MATTE, IVORY #62015 (MKYD6185S.080-P3-62015)
D3829-1KGY	KYDEX 6185, 0.080 THICK, P3-VELOUR MATTE, STEEL GRAY #52068 (MKYD6185S.080-P3-52068)

A NEW ISSUE		SC	10.10.21
REV.	DESCRIPTION	BY	DATE
DESIGN	SC	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	SC		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D3829	SHEET 1 OF 3
APPROVED		TITLE	SCALE
DE APPR.		VERTICAL TUNNEL (BELL 206 L/L1)	NTS
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RELEASED
2010-10-24

8 7 6 5 4 3 2 1



D3829-2 VERTICAL TUNNEL, UPPER R/H

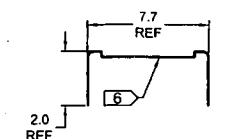
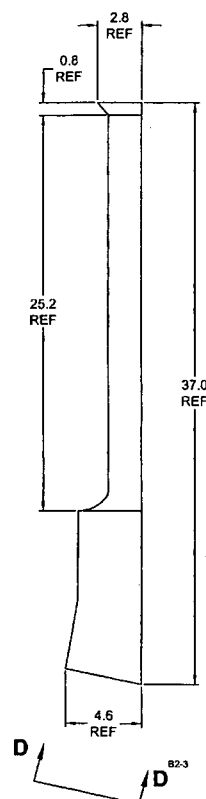
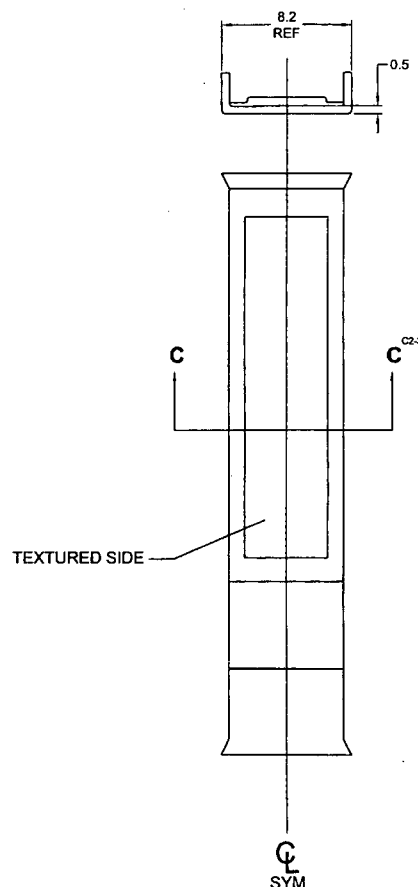
NOTES:

- 1) MATERIAL: SEE TABLE
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: DART P/N (SEE TABLE) PER DART QSI 044 6.4
- 7) WEIGHT: 0.35 lbs
- 8) TOOLING: THERMOFORM PER MOLD DT9233 PER DART QSI 022. TRIM PER MOLD.
- 9) MINIMUM THICKNESS: 0.050" UNLESS OTHERWISE NOTED

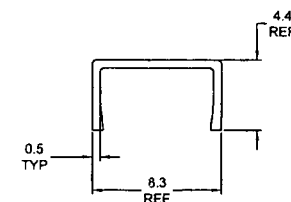
PART NUMBER	DESCRIPTION
D3829-2KIV	KYDEX 6185, 0.080 THICK, P3-VELOUR MATTE, IVORY #62015 (MKYD6185S.080-P3-62015)
D3829-2KGY	KYDEX 6185, 0.080 THICK, P3-VELOUR MATTE, STEEL GRAY #52068 (MKYD6185S.080-P3-52068)

DESIGN	SC	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
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RELEASED
2010-11-24



SECTION C-C



VIEW D-D

RELEASED
2010-11-24

D3829-3 VERTICAL TUNNEL, AFT CENTER

NOTES:

- 1) MATERIAL: SEE TABLE
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: DART P/N (SEE TABLE) PER DART QSI 044 6.4
- 7) WEIGHT: 1.2 lbs
- 8) TOOLING: THERMOFORM PER MOLD DT9226 PER DART QSI 022. TRIM PER MOLD.
- 9) MINIMUM THICKNESS: 0.050" UNLESS OTHERWISE NOTED

PART NUMBER	DESCRIPTION
D3829-3KIV	KYDEX 6185, 0.080 THICK, P3-VELOUR MATTE, IVORY #62015 (MKYD6185S.080-P3-62015)
D3829-3KGY	KYDEX 6185, 0.080 THICK, P3-VELOUR MATTE, STEEL GRAY #52068 (MKYD6185S.080-P3-52068)

DESIGN	SC	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	SC		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D3829	SHEET 3 OF 3
APPROVED		TITLE	SCALE
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Daryl Leger

From: David Shepherd [dshepherd@dartaero.com]
Sent: Tuesday, January 04, 2011 4:46 PM
To: 'Marc Bellavance'
Cc: 'Leger, Daryl'; 'Downing, Eric'; 'Murdoch, Jason'
Subject: RE: D3829-3 Vertical Tunnel Pannel

Marc,

As discussed, I recommend option 3.

David

From: Marc Bellavance [mailto:mbellavance@dartaero.com]
Sent: Tuesday, January 04, 2011 8:21 AM
To: Shepherd, David
Cc: Leger, Daryl; Downing, Eric; Murdoch, Jason
Subject: D3829-3 Vertical Tunnel Pannel
Importance: High

Mornin' David,

Upon thermoforming the part, webs that must be removed are created in the corners where you see gaps – highlighted in red – in attached not-that-clear picture.

DC is not happy with those and Daryl insists there are no other way of doing this but modify the mold which will take considerable amount of time and will scrap a few sheets of material during the process.

Note that installers will trim this considerably, more or less the same as what Russ did when installing the panel here for trial install.

Options are:

- Scrap parts and rework mold – a costly solution;
- Stop drill the gap;
- Trim portion of panel same as what was done during DART's trial install to eliminate gap.

What direction do you want Daryl to take?

Marc Bellavance

Technical/Shop Support

DART aerospace Ltd.

Tel: 613-632-5200 Ext. 243

Tel: 613-676-0992

Fax: 613-632-9311

E-mail: mbellavance@dartaero.com

Web: www.dartaero.com

Product Documentation: Verify Revision Status/Download HERE!



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1/5/2011